

CLAIMS

What is claimed is:

1. A backspot facing tool, comprising:
a shaft having a first end and a second end, a recess located near the first end, the shaft having an outer circumference and being centered on a first axis; and,
a cutting element having an inner portion and an outer portion, the cutting element being pivotally coupled to the shaft about a second axis and being movable between a closed position and an open position, the first and second axes being parallel, the cutting element further having an inner surface, the inner surface having a negative shear angle with a plane intersected by the first axis.
2. A backspot facing tool, as set forth in claim 1, wherein the cutting element is within an outer circumference of the shaft when in the closed position.
3. A backspot facing tool, as set forth in claim 1, wherein the cutting element includes at least one cutting edge.
4. A backspot facing tool, as set forth in claim 3, wherein the at least one cutting edge is perpendicular to the second axis.
5. A backspot facing tool, as set forth in claim 3, wherein the at least one cutting edge forms an angle with a third axis, the third axis being perpendicular to the second axis.

6. A backspot facing tool, as set forth in claim 5, wherein the angle is less than or equal to 30 degrees.

7. A backspot facing tool, as set forth in claim 5, wherein the angle is less than or equal to 45 degrees.

8. A backspot facing tool, as set forth in claim 1, wherein the recess includes first and second transverse surfaces, the first and second transverse surfaces being generally parallel to each other and perpendicular to the first axis.

9. A backspot facing tool, as set forth in claim 8, wherein the inner portion of the cutting element includes a centering element located on a first end, the centering element being received within a first centering bore in the first surface of the recess.

10. A backspot facing tool, as set forth in claim 9, wherein the inner portion of the cutting element includes a second centering bore located in a second end, the shaft includes a retaining screw bore, the second centering bore and retaining screw bore being aligned, the retaining screw bore being adapted to receive a retaining screw, the retaining screw having a second centering element, the second centering element being received in the second centering bore.

11. A backspot facing tool, as set forth in claim 1, wherein the cutting element is unitarily formed.

12. A backspot facing tool, as set forth in claim 1, wherein the cutting element is composed from carbide.

13. A backspot facing tool, as set forth in claim 1, wherein the cutting element includes a removable cutting edge portion, the removable cutting edge portion being coupled to the outer portion.

14. A backspot facing tool, as set forth in claim 13, wherein the removable cutting edge portion is composed from carbide.

15. A backspot facing tool, as set forth in claim 1, wherein the first and second axes are offset.

16. A backspot facing tool, as set forth in claim 1, wherein the backspot facing tool is adapted to be rotated in a first direction to remove material from a workpiece, the inner surface facing the first direction.

17. A backspot facing tool, as set forth in claim 16, wherein the cutting element is adapted to pivot towards the closed position when the backspot facing tool is rotated in a second direction, the second direction being opposite the first direction.

18. A backspot facing tool, as set forth in claim 17, wherein the cutting element exhibits an over-center cam action to initiate movement of the cutting element towards the closed position when the backspot facing tool is rotated in the second direction.

19. A backspot facing tool, as set forth in claim 1, wherein the cutting element includes an outer edge and is movable to an intermediate position, the intermediate position being between the open and closed positions, wherein the outer edge inscribes

a first circle when the cutting element is in the open position and a second circle when the cutting element is in the intermediate position, wherein the first circle has a smaller diameter than the second circle.

20. A backspot facing tool, comprising: ~

a shaft having a first end and a second end, a recess located near the first end, the shaft having an outer circumference and being centered on a first axis; and,

a cutting element having an inner portion and an outer portion, the cutting element being pivotally coupled to the shaft and being movable between a closed position and an open position, the backspot facing tool being adapted to be rotated in a first direction to remove material from a workpiece, the cutting element being adapted to pivot towards the closed position when the backspot facing tool is rotated in a second direction, the second direction being opposite the first direction, and wherein the cutting element exhibits an over-center cam action to initiate movement of the cutting element towards the closed position when the backspot facing tool is rotated in the second direction.

21. A backspot facing tool, as set forth in claim 20, wherein the cutting element is within an outer circumference of the shaft when in the closed position.

22. A backspot facing tool, as set forth in claim 20, wherein the cutting element includes at least one cutting edge.

23. A backspot facing tool, as set forth in claim 22, wherein the at least one cutting edge is perpendicular to the second axis.

24. A backspot facing tool, as set forth in claim 22, wherein the shaft pivots about a second axis and the at least one cutting edge forms an angle with a third axis, the third axis being perpendicular to the second axis.

25. A backspot facing tool, as set forth in claim 24, wherein the angle is less than or equal to 30 degrees.

26. A backspot facing tool, as set forth in claim 24, wherein the angle is less than or equal to 45 degrees.

27. A backspot facing tool, as set forth in claim 20, wherein the recess includes first and second transverse surfaces, the first and second transverse surfaces being generally parallel to each other and perpendicular to the first axis.

28. A backspot facing tool, as set forth in claim 27, wherein the inner portion of the cutting element includes a centering element located on a first end, the centering element being received within a first centering bore in the first surface of the recess.

29. A backspot facing tool, as set forth in claim 28, wherein the inner portion of the cutting element includes a second centering bore located in a second end, the shaft includes a retaining screw bore, the second centering bore and retaining screw bore being aligned, the retaining screw bore receiving a retaining screw, the retaining screw having a second centering element, the second centering element being received in the second centering bore.

30. A backspot facing tool, as set forth in claim 20, wherein the cutting element is unitarily formed.

31. A backspot facing tool, as set forth in claim 20, wherein the cutting element is composed from carbide.

32. A backspot facing tool, as set forth in claim 20, wherein the cutting element includes a removable retaining screw portion, the removable retaining screw portion being coupled to the outer portion.

33. A backspot facing tool, as set forth in claim 32, wherein the removable retaining screw portion is composed from carbide.

34. A backspot facing tool, comprising:

a shaft having a first end and a second end, a recess located near the first end, the shaft having an outer circumference and being centered on a first axis; and,

a cutting element having an inner portion and an outer portion, the cutting element being pivotally coupled to the shaft and being movable between a closed position and an open position, wherein the cutting element includes an outer edge and is movable to an intermediate position, the intermediate position being between the open and closed positions, wherein the outer edge inscribes a first circle when the cutting element is in the open position and a second circle when the cutting element is in the intermediate position, wherein the first circle has a smaller diameter than the second circle.

35. A backspot facing tool, as set forth in claim 34, the backspot facing tool being adapted to be rotated in a first direction to remove material from a workpiece, the cutting element being adapted to pivot towards the closed position when the backspot facing tool is rotated in a second direction, the second direction being opposite the first direction,

36. A backspot facing tool, as set forth in claim 34, wherein the cutting element is within an outer circumference of the shaft when in the closed position.

37. A backspot facing tool, as set forth in claim 34, wherein the cutting element includes at least one retaining screw.

38. A backspot facing tool, as set forth in claim 37, wherein the at least one retaining screw edge is perpendicular to the second axis.

39. A backspot facing tool, as set forth in claim 37, wherein the shaft pivots about a second axis and the at least one retaining screw edge forms an angle with a third axis, the third axis being perpendicular to the second axis.

40. A backspot facing tool, as set forth in claim 39, wherein the angle is less than or equal to 30 degrees.

41. A backspot facing tool, as set forth in claim 39, wherein the angle is less than or equal to 45 degrees.

42. A backspot facing tool, as set forth in claim 34, wherein the recess includes first and second transverse surfaces, the first and second transverse surfaces being generally parallel to each other and perpendicular to the first axis.

43. A backspot facing tool, as set forth in claim 42, wherein the inner portion of the cutting element includes a centering element located on a first end, the centering element being received within a first centering bore in the first surface of the recess.

44. A backspot facing tool, as set forth in claim 44, wherein the inner portion of the cutting element includes a second centering bore located in a second end, the shaft includes a retaining screw bore, the second centering bore and retaining screw bore being aligned, the retaining screw bore receiving a retaining screw, the retaining screw having a second centering element, the second centering element being received in the second centering bore.

45. A backspot facing tool, as set forth in claim 34, wherein the cutting element is unitarily formed.

46. A backspot facing tool, as set forth in claim 34, wherein the cutting element is composed from carbide.

47. A backspot facing tool, as set forth in claim 34, wherein the cutting element includes a removable cutting edge portion, the removable cutting edge portion being coupled to the outer portion.

48. A backspot facing tool, as set forth in claim 47, wherein the removable cutting edge portion is composed from carbide.